

Attorney Docket No. GC560-D1-C1
Page 2

Amendments to the Specification:

The following is a marked-up version the Specification pursuant to revised 37 C.F.R. §1.121, with instructions and markings showing changes made herein to the Specification as filed. Underlining denotes added text while strikeout denotes deleted text.

Please replace the paragraph beginning at page 5, line 24, with the following rewritten paragraph:

Figures 2A-2D ~~2B~~ provides the nucleic acid sequences (SEQ ID NO:3 and 5, respectively) for the enzyme 1,3-propanediol dehydrogenase (PDD).

On page 11, please amend the paragraph at lines 1-19, as follows:

The use of a plasmid comprising a mutator gene, ~~ie, a mutator plasmid,~~ (i.e., a mutator plasmid) can be used to control the mutation rate of a microorganism. As described under Section II below, plasmid constructs can be designed which provide reduced levels of expression of a mutator gene thereby providing a means for altering the ratio of naturally occurring DNA repair genes vs mutator genes. This provides a means for combining the advantage of mutD mutations (which results in random mutagenesis) with the advantages of the other known mutators (lower mutation frequency which leads to a lower burden on the cells). Additionally, plasmid constructs can be designed that allow for curing the evolved microorganism of the mutator gene, such as the use of a temperature sensitive origin, thereby allowing for a means for turning the mutation events off and on in the microorganism. For a gram positive microorganism, such as ~~B. subtilis~~ B. subtilis where the entire genome has been sequenced, the present invention could encompass the steps of deleting or mutating a DNA repair gene, evolving the ~~Bacillus~~ Bacillus, and restoring the naturally occurring DNA repair system through recombination events. As disclosed herein, several members of ~~Escherichia~~ Escherichia, such as ~~E. coli and E. blatte~~ E. coli and E. blattae have been subjected to the directed evolution methods. Illustrative examples of evolved ~~E. coli and E. blattae~~ E. coli and E. blattae have been deposited with the ATCC and have accession numbers PTA-91 and PTA-92, respectively.